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25X1A

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CENTRAL INTELLIGENCE AGENCY

REPORT NO. [redacted]

INFORMATION REPORT

CD NO.

SECURITY INFORMATION

COUNTRY USSR (Armenian SSR)

DATE DISTR. 24 Oct. 1951

SUBJECT Yerevan Rubber Combine

NO. OF PAGES 1

PLACE ACQUIRED [redacted]

NO. OF ENCLS. 4 (LISTED BELOW)

DATE OF IN[redacted] 25X1A
ACQUIRED
25X1X

SUPPLEMENT TO REPORT NO.

[redacted]

The attached information on the Yerevan Rubber Combine is being sent to you for retention in the belief that it may be of interest.

ILLEGIB

Attachments: A. Report on the Yerevan Rubber Combine
1.)
2.) Layout Sketches of the Yerevan Rubber Combine (29 copies
3.) of each)

25X1A [redacted]

[redacted]

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Attachment A

CLASSIFICATION [redacted]

COUNTRY Soviet Union REPORT NO. [redacted]

TOPIC Carbide -and Rubber Industry in YEREVAN (Armenian SSR)

EVALUATION see below PLACE OBTAINED [redacted] 25X1A

DATE OF CONTENT see below

DATE OBTAINED see below DATE PREPARED

REFERENCES

PAGES ENCLOSURES (No. & Type)

25X1X [redacted]

25X1A [redacted]

(40°11' N/ 44°30' E)

a. The YEREVAN/Rubber Plant covers an area of about 1 x 0.8 miles. It is located at the southwestern outskirts of the town. Spur tracks lead to the wide gauge, single-track YEREVAN-LENINAKAN(40° 48' N/43°58' E)railroad line.

b. In the southwestern corner of the plant are 22 oil tanks each having a

25X1A

[redacted] IS AN ENCLOSURE TO [redacted]

volumetric capacity of 75 cubic meters.

c. 9 "rubber furnaces were lined in about the center of the plant. Each furnace was connected with a workshop.

d. According to information of indigenous workmen the plant produced only crude rubber. It was shutdown at the end of the observation time as the entire old machinery of the plant was being replaced by dismantled German material.

e. In normal time the plant is said to employ 1,200 workmen working in three 8-hour shifts.

f. The "Polyvinyl -Acetat" Plant is under construction southwest of the Rubber Plant. It covers an area of 1,600 x 500 feet. In the southeastern corner of this plant are four partly underground oil tanks each of about 100 cubic meters volumetric capacity. There were 12 workshops ,each about 160 x 16o feet, on the area of this plant. Hydraulic presses were being set up in these worksho A total of 250 such presses will allegedly be put into operation. This plant has also a spur track to the main railroad line.

25X1X

2. [redacted]

25X1A [redacted]

a. The "Kautschuk Zavod"Rubber Plant covers an area of about 3,300 x 2,300 feet. It is located in the south of YEREVAN in the suburb of KAUTSCHUK about 1,600 feet east of the YEREVAN-LENINAKAN-

About 300 feet northwest of the plant is a cable factory and about 600 feet southwest is a [redacted] plexiglass factory.

b. Construction of the rubber apparently started in wartime. No additional structures were built by the end of the observation time. Some finishing building work was done only in the carbide departmer in 1946-1947. Not all workshop buildings are built in stone. There are still a great number of makeshift structures . The locksmith's shop of the plant, for instance, is housed in one of these structures.

c. Source mentioned [redacted] following installations:

(1) Power station, a tall stone building with 30 foot high [redacted] lightning conductors. (This is possibly a transformer station accordi to the description of source.)

(2) A very large boiler house consisting of iron structures lined with brickwork.

(3) A workshop building, 650 x 65 feet, and 65 feet high with vehtilation stacks . Part of the carbide needed by the rubber plant is produced in this workshop.

(4) 6 about 50 foot high conical [redacted] cupola furnaces ("carbide furnaces" accodding to designation of source).

(5) A covered dump for coal and coke.

(6) A large reservoir [redacted] in which the [redacted] processed carbide mud was soaked. This product is used for building purposes.

d. Power is supplied to the plant through a long-distance line.

Hard coal, coke- , salt- and other not identified shipments came by rail.

e. Synthetic rubber was produced. There was also a small-scale tire production.

f. According to Soviet information production was not running on schedule at the time of observation and it was planned to intensify the production rate after the end of building work. For this reason a German industrial expert came to the plant in 1947.

25X1X 3. [redacted] 25X1A

a. Spur tracks lead from the YEREVAN railroad station to the Synthetic Rubber Plant located 2 miles south of the railroad station, to the Cable Works located 1,000 feet north of the Synthetic Rubber Plant to the Tire Plant located between the two above-mentioned plants and to the Bakelite Factory under construction about 3,300 feet southwes of the Rubber Plant.

b. The Rubber Plan was enlarged from 1945 until early i 1948.

c. The plant has four departments which source designated "hydrogenatio installations." Source only remembers the ramified "non insulated" pipe system passing through all buildings. The pipe lines were covered with thick ice layers also in summer and watchlike thermometers showed temperatures ranging from minus 20 to 30 degrees centigrade.

A

d. Spongy ,~~xxxx~~ yellowish crude rubber was produced in two workshops which ~~PWisxwasxprohibited~~ were off limits to PW's.

e. The carbide plant was equipped with 6 electric carbide furnaces and 6 "electrode-smelting furnaces" for carbide production. In addition there were 6 lime kilns fired with coke. The carbide tapping ran-off into high trucks lined with fireclay. The carbide mass was crushed after cooling and packed into metal drums. ~~XXXXXXXXXXXXXXXX~~
~~XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX~~
Three carbide furnaces are continuously in operation. According to estimate of source the daily output of these furnaces is about 54 tons.

f. The plant has a high boiler house with one smoke stack. The boiler house is fired with coal.

g. Rock salt ~~is~~ was powderized in buildings about 33 x 65 feet. The salt was then dissolved in water in containers with a diameter of about 100 feet. The brine was pumped into containers and pipes. Further processing of the salt is not known to source.

h. ~~XXXXXXXXXXXXXXXXXX~~ Acetylene gas was developed from carbide in an installation equipped with an unknown number of generators. The daily carbide consumption of each generator was 36 tons. The produced gas was conducted through underground pipe lines to four gasometers each ~~withxaxdiameter~~ 60 to 65 feet in diameter and 33 feet high.

i. A building about 330 x 330 feet was constructed near the Rubber Plant in 1946-1947. It was a plant where tires for motorcycles, passenger cars and trucks were produced.

j. Still annother plant was under construction in the vicinity of the Rubber Plant during the time of observation. This plant was scheduled to produce plastics ("bakelite"according to the Russian designation).

k. For layout sketch see Annex 1.

25X1X 4. [redacted] 25X1A

a. The Rubber Plant is about 2,600 feet south of the outskirts of YEREVAN. There were seven workshop buildings of various sizes.

b. In one workshop building, about 500 x 160 feet, there were three machines rising through all three stories of this building. A yellow, plastic mass was produced in this workshop.

c. Almost black rubber plates,20 x 40 inches,40 x 40 inches and 12 x 40 inches with thickness ranging from 30 to 60 mm (?) were produced in another workshop.

d. Source remembers incoming shipments of following raw materials:

Lime;

a black, liquid mass coming in wooden tubs;

a yellow, viscous mass coming in iron barrels.

e. Outgoing shipments: 15 to 20 daily carloads in the direction of

TBILISI. Amount and kind of shipments are not known.

f. The work force is estimated at 2,500 including about 800 PW's. Work was done in a three shift schedule.

g. When the plant was enlarged between 1942 and 1947 ~~appar~~ German material was apparently also used. Source observed on one box DELITSCH marked as ~~xxx~~ station of origin.

h. Immediately at the outskirts of YEREVAN northwest of the Rubber Plant there was a plant consisting of six workshop building of variable sizes. It was a plant for chemical warfare agents according to the designation of source. Some small-scale building activities were still under way at the time of observation.

i. At the time of observation another plant was under construction about 5,000 feet south of the plant mentioned in i) and southwest of the Rubber Plant. Production of this plant was not known to source. Spurce observed the installation of two high presses in one building. The presse were heavily rusted and allegedly originated from Western Germany. Boxes with machinetools, partly of Canadian origin and marked with TORONTO, wer in one storage place.

25X1X 5. [redacted] 25X1A

a. Part of the Rubber- and Carbide Plant at the southwestern outskirts of YEREVAN was still under construction at the time of observation.

b. In the southern part of the plant there were two batteries of six boiler-shaped oil tanks each. The tanks had a volumetric capacity of 50 tons each and were sunk into the ground.

c. A department equipped with hydraulic presses already produce crude rubber though the workshop building was not yet completed.

d. The workshop buildings used for carbide production were equipped wit modern American machinery.

e. Two daily carloads of finished rubber goods were shipped at the time of observation.

f. Two daily carloads of rock salt was unloaded the use of which source did not know.

6. [redacted]

25X1X

25X1A

a. Next to the Rubber Plan which was in operation a short time ago an older plant installation was renovated and converted into a plant for the production of plastics or some similar production. A new cable works was considered an especially modern plant. It was built fro material originating from a completely dismantled German cable works in BERLIN-SIEMENSSTADT. The cable works was already in operation at the time of observation and source noted that many heavy underground cables were produced.

b. In addition to these plants [redacted] installations of the MEISSEN

25X1A

[redacted]

Porcelain Factory which had been evacuated to YEREVAN were set up a
put into operation already in 1947. The construction was
allegedly copied exactly from the original. Also the kaolin materi
processed in YEREVAN are said to resemble closely those used in
MEISSEN.

25X1X [redacted]

25X1A

a. Source believes that the YEREVAN Rubber Plant was built during th
war. It was already in operation early in 1947. The plant located
at the southern outskirts of YEREVAN covers an area of about 1 x 1 mi

b. Source describes following plant installations:

(1) The very high boiler house has several smoke stacks and is equipped with three steam boilers(one oil-fired and two coal-fired) The fuel oil is pumped through injection nozzles into the oil-fired furnace, while the other two furnaces have traveling grates automatically supplied with coal by chutes. The chutes are fed by means of an inclined conveying machinery.

(2) There were three high furnaces with smoke stacks walled on top in one longitudinal building. These furnaces reminded source of lime kilns.

(3) There were four furnaces in another building. Three furnaces were in operation at a time. Heating of the furnaces was done by coal electrodes. The furnaces had a cross section of about 3 x 3 f

25X1A

[redacted]

and were 6,5 feet long.(Horizontal position) The furnaces were charged from the top, [redacted] where raw materials came in electr railroad dump cars.

(4) In the adjacent building equipped with lifting appliances and travelin crabs were grinding mills for crushing the carbide produced in the above-mentioned furnaces.

(5) [redacted]

There were still some workshop buildings in the plant the use of which source did not know.

(6) Source did not observe a power station. He saw only a high tension line coming from an unknown direction into the plant.

c. Following shipments came by rail: hard coal, coke and carbide in drums. Part of the carbide was apparently submitted to a thermal treatment the u of which source does not know.

25X1X 8. [redacted] 25X1A

a. Power was supplied to the YEREVAN Rubber Plant by a special power station equipped with two Diesel installations.

b. Following raw materials were unloaded in the plant: lime, wood,coal and apparently carbide in tin containers. Also an unknown liquid was unloaded from tank cars and [redacted] carboys as well as earthenware containers were unloaded from railroad cars, in addition to other [redacted]

material which source could not identify.

c. While loading boxes source observed plates of a dull lustre about 20 x 8 inches and 20 mm thick. Chips of these plates were used by workmen for lighting stove fires. They burned with a very bright flame.

d. PW's employed in the plant were replaced every month. Recreational periods alternated with work periods. Increased milk-, fat- and bread rations were allocated. Many workmen wore protective asbestos clothing during work. Source did not obeerve any gas mask The vegetation around the plant had changed into brown color. During close weather the waste gases of the plant caused respirator trouble.

25X1X 9. [redacted]

[redacted] 25X1A

a. Raw material shipments came to the YEREVAN Rubber Plant from KIROVAKAN and from the quarries at ~~the Ararat Mountain.~~ ARARAT Part of these materials resembles carbide.

Field 12

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DO NOT DETACH

Summary and Comment:

1. Location and history:

The Rubber Combine and the Carbide Factory are located at the southern outskirts of the Armenian capital YEREVAN(formerly ERIVAN). YEREVAN is sxxthexSangaxRiverxandxsurroundedxwith located on the Sanga River, not far from the Araxes Plain and the Turkish national border. IXXXXXXXXXXX It is connected with TIBLISI via the ULUKHANLU Junction by the LENINAKA KIROVAKAN(40° 48' N/44° 30' E) railroad line or by the newly built SEVA ((40°25' N/49°50' E) KIROVAKAN railroad line. There is also a direct railroad line to BAKU via ULUKHANLU-NAKHICHEVAN(39°12' N/45°24' E)(in Azerbaidzhan) and XXX DZHULFA.

The enlarged Rubber Combine now partly equipped with new installations arose from the prewar rubber plant "KIROV,SK.Sovpren No.1". This plan was for a long time an experimental installation for the production of synthetic rubber on the basis of acetylene produced from calcium carbid However, normal production had started already before the war. It was t only plant of this kind in the Soviet Union. All other rubber syntheses in the Soviet Union are based exclusively on the potato spirit or other spirit varieties according to the so-called Divinylprocess of LEBEDYEV. However, this process is not only very ~~costly~~ expensive ,but also uses important substances required for the food supply. Therefore, since years the greatest efforts were made to develop xxxxxxxxx rubber production from other basic materials such as carbide, crude oil and natural gas.

However, until the war this problem could not be solved satisfactorily and it seems that certain progress could only be reached after vigorous American aid had started and dismantled German material had been installed.

The development of the YEREVAN Plant appears to have progressed but slowly. PW's were assigned to improve the old plant not until the first quarter of 1946. All old and important apparatuses were removed to be replaced by better ones either shipped from Germany or from the USA and Canada.

It was not determined why the old installations did not work as desired, as the acetylene-based production process was also taken up by the American Firm "Du Pont De Nemours" (Rubber Chemicals Division WILMINGTON 98, Delaware.) Carbide production is said to have been a special bottleneck in former years.

The largest carbide factory of the Soviet Union was built in YEREVAN simultaneously with the plant for synthetic rubber or perhaps even earlier. The first completed plant section with an annual [redacted] capacity of 20,000 tons of calcium carbide started operation in 1936. Later the output was planned to be tripled. The theoretical annual capacity was scheduled to reach 50,000 to 60,000 tons after the end of building operations in 1941.

b. Plant installations : According to available information the YEREVAN Rubber Combine had

following installations before its reconstruction:

a. Carbide department. It consisted of about 10 buildings, mostly iron-concrete structures, a battery of 8 lime kilns with grinding mills, an installation of 6 carbide furnaces and of accessory carbide -crushers.

b. Acetylene department. Two installations of acetylene generators wer scheduled to produce 16,000 tons of acetylene annually. The department consisted of 4 to 5 large and middle-sized buildings aswell as of two gasometers for the storage of gases.

c. A department which should produce 12,000 tons of Monovinylacetylen annually.

d. The department for the chloralkali-electrolysis and the further processing of chloric gas was housed in two buildings. The capacity of this department was planned to 10,000 tons.

e. There were also installations for the production of chlorbenzol and chlororpren("Sovpren"according to the Soviet designation).

f. The rubber-processing department comprised a great number of buildings. The production of this department included tires for vehicles.

g. In addition to these important production departments there wer still installations for the production of sulphuric acid and nitrogen The produced nitrogen was probably calcium cyanamide which is almost necessarily produced from inferior carbide charges during carbide production.- Older reports also mention ammonia and liquid oxygen.

h. In addition to these workshop buildings there were a number of buildings housing the administration, laboratories and first aid statio: Despite the long construction time only the most important depart- ments were apparently accommodated in stone buildings while a great n number of secondary installations and workshops were housed in make- shift structures.

The ~~xxxxxplant~~ entire plant covered an area of about 123,000 square meters, the built-up area was about 50,000 square meters.

Apparatuses of important departments were removed and replaced by new ones since 1946. This plant conversion lasted for about two

25X1X years before partial production could start. [redacted] the new installations were set up mainly in already existing building Only some new buildings were built. Therefore the layout of the Combine is almost unchanged as compared to its old outline. This fact may be important for the evaluation of old aerial photographs. The construction of industfial and residential buildings is under way onl in the surroundings of the Combine.

The information supplied in these reports does not give a comprehensiv picture on the ~~xxxxxxxxxxxxxxxxxxxxxxx~~ details of the new installations. There is no doubt that the lime-burning department with its 6 to 8 cupola furnaces, the carbide department with its 4 electric arc furnac the grinding mills, the chlorine department, the boiler house and the power station have been provided with new machinery and equipment.

However, the arrangement is generally the same as it was before the reconstruction. As six carbidefurnaces were operated previously against only four at the present time the output of the carbide furnaces has apparently increased.

The boiler house is equipped with modern oil- and coal firing installations. The power station with its two Diesel engines can only be considered an emergency installation used during power-breakdown periods. Its transformers serve to convert the current supplied by the KANAKIR (40°13' N/ 44°32' E) Power Plant.

The buna-producing synthetic department as well as the synthetic department working on a crude oil basis are quite recent installation These departments have certainly been housed in already existing workshop buildings. Also the appatuses which source designate "hydrogenation installations" are part of these departments.

The information on a plant alternately called Plexiglass -, Polyvinylacetat- or Bakelite Plant is somewhat vague. The same applies to an installation where some very large hydraulic presses based on four pillars have been put into operation and where still additional presses are scheduled to be set up. The possibilities for the production of plastics on the basis of produced vinyl compounds and acetylene derivatives are so variable in the YEREVAN Combine that it is impossible the identify

the actually processed material from the indications of these reports. However, it is certainly not bakelite.- Bituminous crude oil residues were doubtlessly processed with produced artificial resin possibly with admixtures of natural resin.- These products are processed into plastics on the spot which can be inferred from the above-mentioned presses. According to the description these presses resemble those manufactured by the Firm Becker & Van Huellen in KREFELD.

So far, there is no reason to assume that chemical warfare agents are produced in the Rubber Combine or in a nearby plant. The processe raw materials such acetylene, clorine etc. may suggest such a pro - duction in an emergency. However, so far there are no indications that such a production was started. There may have been a small-scal production of cyanides and arsenic compounds during the war, but this production has certainly been abandoned since long. There are large installations in DZHULFA(38°54' N/45°38' E), BAKU (40°33' N/43°37' E) and SUMGAIT which are much better suited for the production of chemical warfare agents.

Originally it was planned to start a large-scale rubber ware productic in YEREVAN. However , so far these plans had only little success.

3. Production. According to available information following items are produced in the Combine: carbide, crude rubber, chlorine, plastics, oxygen, probably calcium cyanamide, chlorbenzol, sulphuric acid,

as well as paints and varnishes. There may still be some additional products. No information is available on the actual capacity of the plant.

4. Raw materials. The most important basic raw materials for the [redacted] YEREVAN Combine are coal, limestone, rock salt and crude oil. The raw material sources are: the "Grusin" Mines of TKVIBULI(42°22' N/42°59' E) and TKVARCHELI(42°51' N/41°41' E) for coal ; the quarries of DAVALU (39°50' N/44°52' E) at the ARARAT railroad station for limestone; the surroundings of NAKHICHEVAN for rock salt. Crude oil and crude oil residues are supplied from the BAKU area.

5. The indications on the work force vary between 2,000 and 3,000. The figure may probably be still higher.

Map sketch of the YEREVAN Rubber Combine

A Cable works

B Tire plant

C "Sovpren No.1 "Rubber Plant

1. Administration building
2. First aid station
3. Depot
4. Cooling installation
5. [illegible] Carbide workshop
6. Boiler house with smoke stack
7. [illegible] Two rubber-producing workshops
8. Hydrogentaion installation(? according to designation of source
9/ Probably chloralkali-electrolysis
10. Acetylene generators
11 Gasometer

D Plant producing plastics

Map sketch of the YEREVAN Rubber Combine

A 1 Administration building

2 Depot for spare parts

3 Depot for building materials

4 Carbide-crushing installation

5 Carbide furnaces

6 Lime kilns

7 Laoding ramps

8 Inclined conveying machinery

9 Boiler house

10 and 11 Depots

B 1 Underground pipeline

2 Excavation

3 Underground tank

4 PW Camp No.7115/9

C Water basin

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...ISURE TO [redacted]

Annex 3 to ...c

Layout of the YEREVAN Rubber and Carbide Combine

A Rubber Plant

1 Coal dump

2 Limestone dump

3 Lime kilns

4 Lime crushers

5 Production of electrodes

6 Barrel factory and barrel depot

7 Depot of materials

8 Workshop

9 Battery charging station

10 Transformer station and power station

11 Carbide processing

12 Carbide furnaces

13 Depot for spare parts

14 Carbide packing

15 Carbide depot

16 Rubber depot

17 Clothing depot

18 Administration

19 First aid station

20 Plant laboratory

21 Rubber dispatch department

22 Depot for building materials

23 woodworking department

24 Boiler house

25 Coal processing

26 Production of paints and lacquers

27 Probably sulphuric acid tanks

28 Production of sulphuric acid

29 Cloralkali electrolysis

30 Chloropren department

31 Polymerization department

32. Crude rubber production

33. Production of finished rubber wares

34. Rubber test installations

35. Probably cooling plant

36. Production of oxygen

37. Rubber depot

38. Purification of acetylene

39. Production of acetylene

40. Tanks for acetylene gas

41. Chlorine department

42. Production of chlorbenzol

43. Settling tub for carbide mud

44. Crude oil dump
45. Fuel, possibly also crude oil dump
46. Nitrogen installation

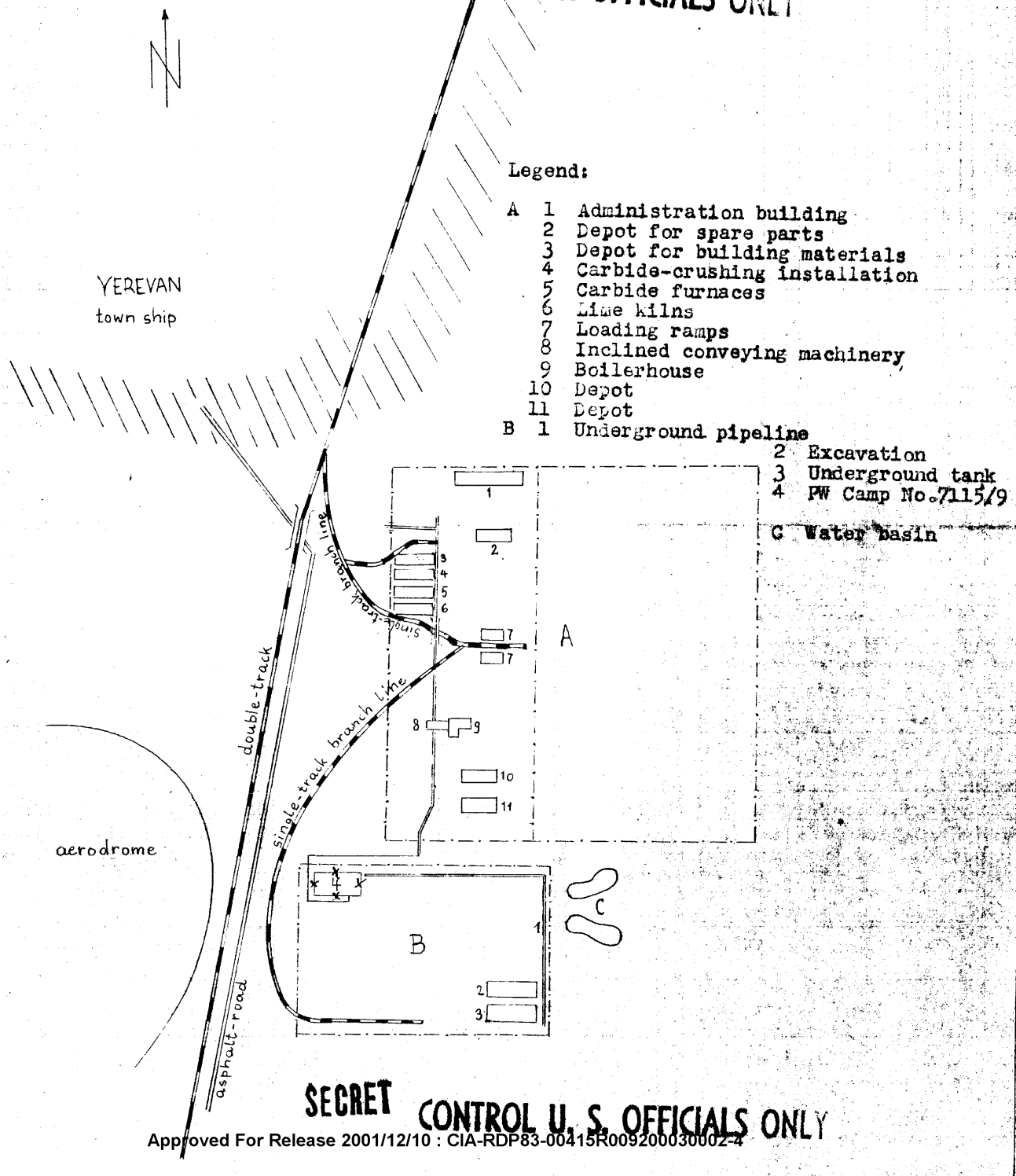
B. Factory producing plastics
C. Cable works
D. Tire Plant
E. Furniture Combine
F. Military Motor Pool
G. Bread factory
H. Repairshop for motorcars and vulcanization shop
I. Tobacco factory
K. Soap Factory, Chemical Plant
L. Factory for potassium bichromate

see

L. Cotton-cleaning factory
M. Dairy farm
N. Large workshops
O. Crude oil dump

Annex 2 to [redacted] 25X1A

Map Sketch of the YEREVAN [redacted]



Legend:

A 1 Administration building
2 Depot for spare parts
3 Depot for building materials
4 Carbide-crushing installation
5 Carbide furnaces
6 Lime kilns
7 Loading ramps
8 Inclined conveying machinery
9 Boilerhouse
10 Depot
11 Depot

B 1 Underground pipeline
2 Excavation
3 Underground tank
4 PW Camp No.7115/9

C Water basin

Annex 3 to [redacted]

Layout of the YEREVAN Rubber and Carbide Combine

[redacted]

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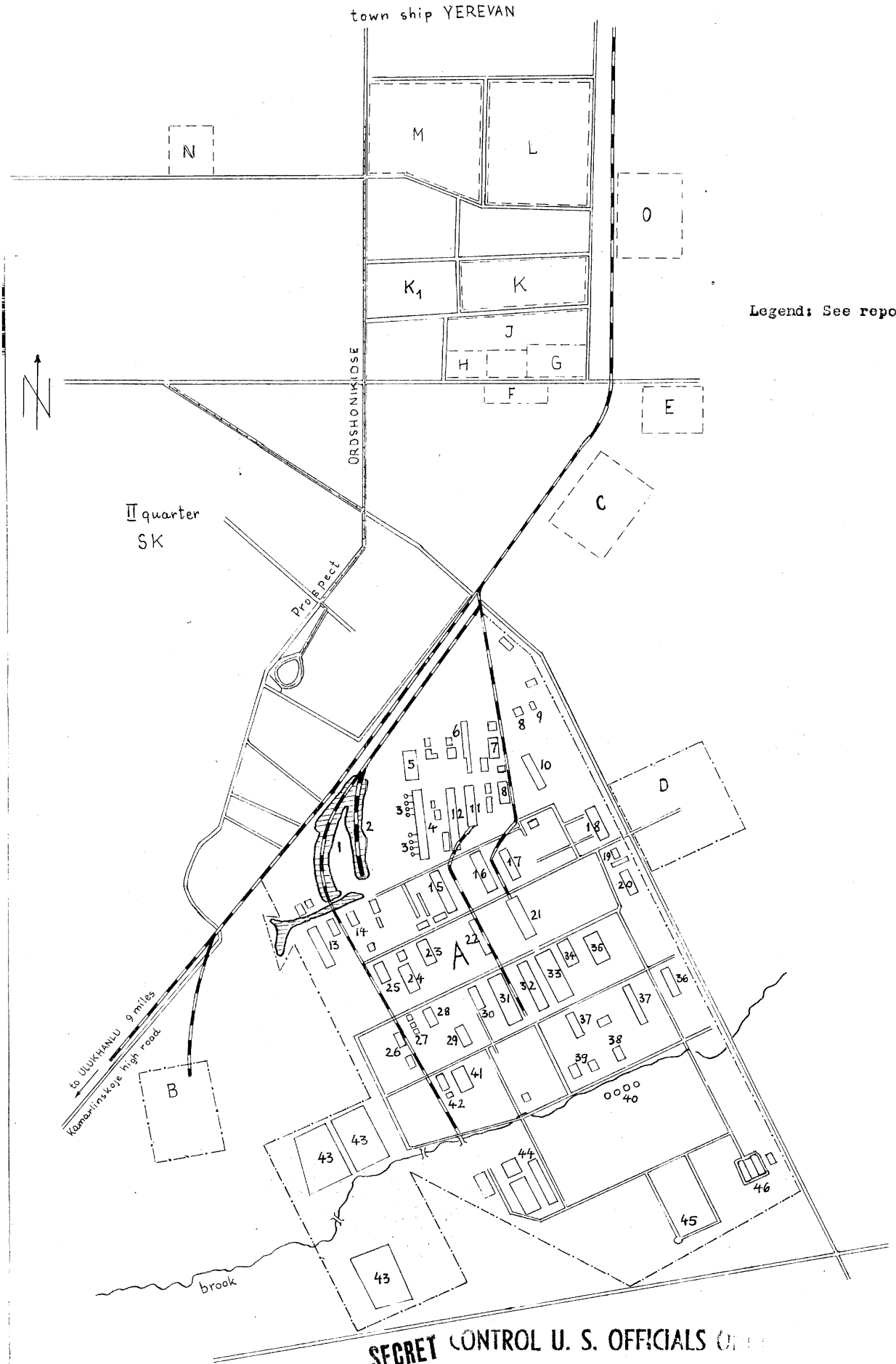

Legend: See report

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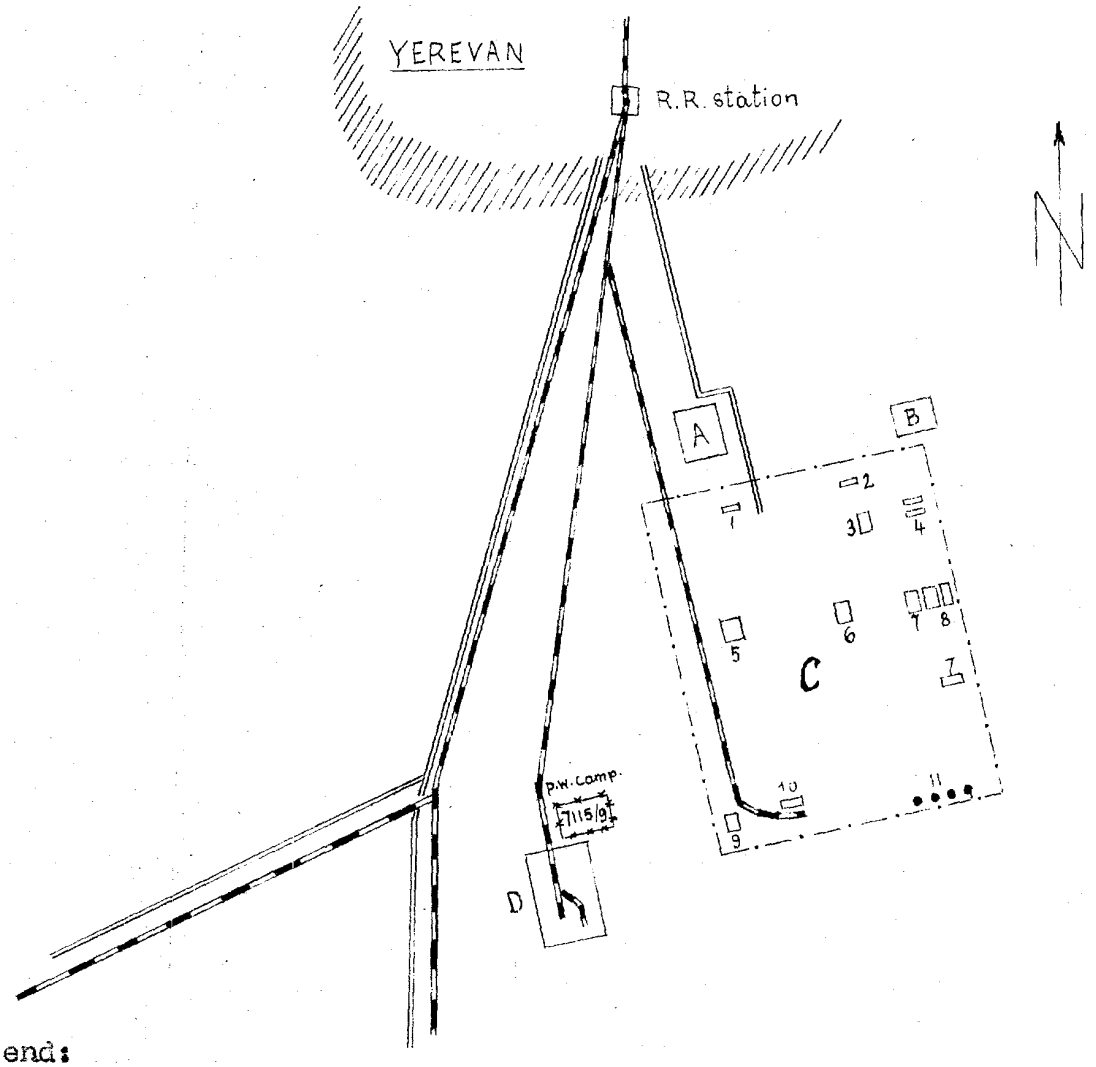
Map Sketch of the YEREVAN Rubber Combine



Legend:

A Cable works
B Tire plant
C "Sovpren No. 1" Rubber Plant
- 1 Administration building
- 2 First aid station
- 3 Depot
- 4 Cooling installation
- 5 Carbide workshop
- 6 Boilerhouse with smokestack
- 7 Two rubber-producing workshops
- 8 Hydrogenation installation (? according to designation of source)
- 9 Probably chloralkali-electrolysis
- 10 Acetylene generators
- 11 Gasometer

D Plant producing plastics

not to scale

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